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A HANDBOOK

TO THE PRACTICE OF

POTTERY PAINTING

BY

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INTRODUCTION.

THE singular interest that has been excited in late years in the subject of Pottery is at this time bearing remarkable fruit in the shape of a widespread effort to produce forms, and surface decoration on forms, that shall rival those done in such old times as are regarded as being peculiarly rich in artistic light and insight. The rivals to the ancient works are seen daily in increasing numbers and in varying beauty, and of most diverse colours and characters. Scarcely a month now passes but some addition is made to the number of wares decorated by new methods, which take the impress of the individual minds that have invented them. We thus have had revivals in Majolica, Faience, Lustered ware, &c. &c., and with all we may say truly, that as examples of pottery—that is, more especially in the mechanical and material construction of the new wares—they greatly exceed the old ones in perfect finish, durability, and chemical combination of their parts, both in body and glaze. But this is not everything; and it is well known and seen that the ancient works, and those of the Renaissance, excel our own in their taste, artistic freedom, and wealth of ideas; and in these particulars we have still much to do to equal, still more to do to excel, these old-world productions of the potter's art.

But the spirit is abroad, and in all European countries the same active interest in pottery is perceived. Among a large

class of amateurs in this country there is a want of practical information on the methods of work in pottery decoration; and no doubt the absence of this practical knowledge is the reason why so much less china and pottery painting is done by amateurs in this country compared with Germany, for instance.

For these this little handbook is mainly intended, and the writer will feel well rewarded for his work in putting it together, if it should conduce to the spread of a wider appreciation and practice of the beautiful fictile art, that has from the most ancient times been the object of admiration to legions of persons of taste and of cultivated mind.

POTTERY PAINTING.

At the risk of saying what nearly everyone already knows, it must be made clear at the beginning, what Pottery is. A pot is a vessel made of clay. Clay is that natural substance produced by the grinding and washing down into hollows, or places where it can settle, of many sorts of rocks; and as the varieties of rocks are many, so are the varieties of clay; but to take a familiar example: the clay of the fields in the Weald of Sussex or Kent has a sufficient consistency to stick together. Its particles may be moulded with the hands, pressed into moulds or dealt with variously, and it is thus plastic by reason of the quantity of water that is in combination with the earthy particles. A flower-pot, for instance, made of this clay, and set aside to dry in the shade, would keep its form, and be precisely the same flower-pot as when it was wet, except that it would have shrunk a little. If this were exposed to the heat of the summer's sun, still more water would be expelled, and the clay form would become harder and closer in texture, and might be used for many indoor purposes, but would not allow of any use that involved the contact with water, as it would still be a mere clay pot. If, however, it were put into a fire, so that so much more of the water was driven out as to change its hardness to that of a tile or a brick, then fluid might be put into it without any risk of its falling to pieces; and when water has been thus

driven out by fire it does not again enter into combination with the clay, and the vessel remains a piece of pottery for ever. Thus, the art of so preparing clay, and forming it, and burning it, that it takes a permanent unalterable form, is that of the Potter.

The flower-pot that we have taken as an illustration may be, after firing, white, yellow, red, grey, blue, black, or any or all of these together: that is a condition dependent solely on the clay of which it was made, and the presence or absence of iron or other colouring matter in the clay.

Now the fired flower-pot has certain characteristics. It is insoluble, somewhat brittle, porous, gives a dry adhesive sensation to the tongue, and is more or less rough and gritty to the touch, and on the whole not a very useful thing for the higher purposes of life. For many ages all pottery was in this rough, half-finished state, and it is very doubtful if the Greeks ever, or the Romans up to the age of Augustus, knew anything of any other pottery. But the remedy for these defects of texture is twofold: one is by skilfully compounding the body, so that it is rendered impervious; the other is by coating the porous body with a glaze, by which is meant a film of glass. By adopting this latter method we have the combination that is usually seen in a piece of useful pottery, namely, a 'body' more or less rough and porous, covered with a 'glaze' which gives the piece smoothness—a gloss—and renders it quite impervious to moisture.

The first method, viz. that of rendering the body impervious, applies mainly to two kinds of ware: china, as it is usually called, (which is porcelain) and stoneware; other wares are made impervious by their glaze.

It was a great event in manufacturing industry, when it was found that firing a form of clay made it indestructible. It was a second step onwards when a true glaze was discovered. Certainly the potters of Babylon knew the process, as the remains

of their tiles show. But many hundreds of years elapsed before the secret was given to the Western world, and this came either through the Moors by tradition, or was re-invented by them. In any case, in the ninth century glazed pottery was produced in Spain by the Moorish potters.

Glaze and glass are made out of the same materials. Flint sand and soda fused together make glass; the addition of metallic oxides gives colour, opacity, or a better power of cohesion to glass; and these are precisely the conditions of glaze as applied to pottery.

Here are now two essentials to the proper formation of a useful piece of pottery: first, the body; secondly, the glaze. The methods of making and applying these are questions for technical pottery, not for this little work.

Enough to say, that the form as it comes from the kiln, after its first firing, is called 'biscuit.' It is then dipped into a creamy looking mixture, consisting of the various materials which make the glaze, ground to a fine powder and mixed with water. When the porous ware is dipped into this mixture, a certain absorption of the water takes place, and a deposit of the solid parts of the glaze follows, and the vessel is again fired, when the heat of the kiln reduces these particles of glass to a smooth, shiny, and glossy surface, exactly fitting to the body over which it has been applied.

Leaving stoneware and china out of consideration for the present—although they may also be glazed or not—this piece of pottery is what is called earthenware, and is, in fact, the pottery of the middle ages, equally with the pottery of to-day. The red pans and pitchers of the English rural districts are of this construction, so is the ordinary earthenware of our dinner services. The decoration is of most varied kind, but the great fact about it is that the body is an absolute thing that always

influences the colours that are put over it, and which at the same time determines the colour of the glaze, except when a 'slip' of clay or some opaque substance is put between the body and the glaze.

A great step onwards was again made when it was discovered that any common clay, that might be almost or quite like a brick in coarseness, could be coated with an enamel made from tin, which would give a white ground for the artist to work on. This discovery also came from the East, and was developed by the Moors in Spain. Their ware was exported to Italy, where it was used in the form of circular dishes to decorate their churches. It was believed that it came from Majorca. The Italians called this ware majolica, to indicate this real or fancied origin. The exportation was carried on to such an extent, that the finest examples of the ware are or have been found in Italy, not in Spain. The revival of arts and manufactures in Italy in the great fifteenth century had its effect on the potters and their art, and certain Italian potters re-invented the tin enamel for a covering of the coarse body they were obliged to use. It is known that the earlier Italian ware is simply lead glazed on the body, and that the change to the tin enamel system of covering the body took place early in the fifteenth century. Later, towards the end of the century, they imitated the lustre ware so successfully that they far surpassed their Moorish originals, especially with a certain ruby lustre of Gubbio, which remains a marvel and a delight to artists and collectors to this day. These wares were presents for kings, and were sought after in distant countries, where they moved the ingenious to various efforts at imitation. At any rate, in the course of two hundred years, these tin enamel wares were made in France, Germany, and Holland; and Palissy's troubles, that are so widely known, were doubtless due to his lack of understanding of the proper constituents of the

tin enamel—a piece of information that any potter across the Alps could have given him. This Palissy ware is tin enamel, so also is delft, and this was the system generally adopted to obtain artistic pottery, and the ware thus made is called majolica in Italy, delft in Holland, and Palissy ware in France. It may perhaps be well to say that modern English majolica is simply made by the ware being dipped or painted with a coloured glaze, which then runs or fuses by the heat of the kiln and so covers the coarse and hard body; but it is the product of the accidental running together of the different glazes with which it was covered. The name is a mere trade distinction, and has no relation with the Raphael ware or other of the Italian Renaissance. On the other hand, 'faience,' in its modern signification, is exactly the same as earthenware, and is a French distinguishing name, taken from the wares from Faenza—not the Italian town, but a town of the same name in the south of France, which produced ordinary ware, simply painted and glazed afterwards. The Lambeth 'faience' is exactly of this character.

There is a class of pottery distinct from these. It is called stoneware, and was made in the earliest ages of art. It is one of the undiscovered facts in the potters' history, when stoneware was first made. It differs from every kind of faience or majolica manufacture in being of impervious body, in which it is like porcelain. It further differs from every kind of ware whatever, in being glazed with the fumes of salt. It differs still further from all other wares by being fired and glazed and finished in one operation. During its first and only firing, which converts the brittle and useless clay vessel into impervious ware, and when an intense white heat is reached, salt is thrown into the kiln, either from above, through holes in the crown of the kiln, or into the fire-holes beneath, or into both. The intense heat decomposes

the salt, which is changed by the same agency into a gaseous fume or steam. One constituent of salt, the chlorine, escapes out from the kiln as vapour; another portion, however, the soda, as it flies through the kiln, meets with the white-hot ware, in which is always a portion of silex or flint, and forms with it a silicate of soda or soda glass. This subtle aërial glazing is thin, transparent, intensely hard, and almost indestructible, and does not coat the finest line or scratch so thickly as to obliterate it. It is on this account, from an artistic point of view, the perfection of glaze. But the disadvantages are numerous. Few colours can stand the trial they are subjected to in the intense heat. The more or less accidental contact of the fire, which has its currents of more or less intense heat streaming through it from the fire-hole to the crown of the kiln, produces various unforeseen effects on the colour of the ware and on the colour of the pigment used in its decoration. Again, the accidental path taken by the salt in its downward course from the crown of the kiln to the white-hot ware, produces great and unanticipated results in the colour of the ware, and leads to a bleaching or washing out of even strong colours, such as cobalt, which not unfrequently changes to grey or brown under the excitement of this downpour of chemical matter. Such is the method of glazing stoneware with salt, which has been practised for hundreds of years. The ware produced by this method was made in Germany, especially on the Rhine, and is now sold by dealers under the name of Grès, or Grès de Flandres. A revival of the principles on which the old Grès was decorated has been made at Lambeth. It is called Doulton ware, and has justly attained to great celebrity on account of its fine form and great harmony of colour. The old grey colour is to be attributed not only to the clay, but also to the fact that all the old ware was fired with wood as fuel. This of course is not the case with the Doulton ware, which is

fired with coal, hence the difference in general tone and colour from the old Grès. The fifteenth, sixteenth, and seventeenth centuries saw this old Rhenish pottery at its best. It declined, in the beginning of this century or end of the last, to a mere manufacture of useful articles.

China or porcelain is to some extent related to stoneware, inasmuch as the body is completely impervious, but it has a beautiful quality of its own, that is, its transparency. The importation of porcelain from China and Japan in the middle ages was scarcely known — but with the energetic spirit of discovery of the seventeenth century was joined an equally earnest one of trade. And in consequence of this conjunction pieces of oriental porcelain were found in Europe from that time in an always increasing number, until the beauty of the material, more than its exquisite decoration, made its importation into Europe become a real perceptible demand. This was met by large quantities being sent from the East, but naturally at so high a cost as to stimulate potters to produce a material that would take the place of the imported ware. One by one the potters abroad and at home found out the mystery of the composition of porcelain. It is, of course, made of china clay, or kaolin, and is glazed with china stone or 'orthoglaze,' a material that has all the constituencies of true glaze, but found naturally in the china clay districts. Various accidents, that read like the chance occurrences of a romance, led to the discovery of the true earth, and one after another all the countries of Europe had their china potteries, many of them supported or subsidised by the State or by Royal persons. Such were those at Meissen, Sèvres, Chelsea, and others.

To the historian of pottery this discovery was remarkable, chiefly from its influence on the 'faience' or 'majolica' wares of Italy and other countries. It caused their abandonment as

coarse and heavy, and it retains its supremacy to this day, when, although revivals are numerous, they are in all cases revivals of wares in themselves artistic, and are on this ground interesting. No effort is made to apply these new wares to the everyday uses subserved by our china or modern earthenware productions.

To sum up what has been said, there are these various forms of pottery:—

1. The mere baked clay, such as a brick, tile, or flower pot, called Terra Cotta.
2. This common material coated with a film of glass, which may or may not cover colours, called Earthenware, Faience, &c.
3. This common material coated with an opaque white enamel on which colours may be placed, called Enamelled ware or Majolica.
4. Stoneware, an impervious body glazed with salt, such as Grès de Flandres and Doulton ware.
5. Porcelain, an impervious semitransparent body with a pure earthen non-metallic glaze.

Under one or other of these heads all pottery may be classed.

It is no part of this work to enter into the processes and materials out of which vessels of pottery are made. It will be sufficient to understand that earthenware may be of any clay body, and may range from black to white through every shade of colour, and that what the body is, that also is the main colour of the ware when glazed; further, that this body is glazed with certain admixture of sand in which silex, quartz, or felspar are combined with borax and soda, and that this mixture may be the vehicle for the introduction of lead. Also that this glaze may be coloured with any of the metallic oxides. This is the majolica of the shops of the present day. The majolica of the Renaissance

is this body covered with a glaze which has been rendered opaque and white by oxide of tin, or by lime.

The glaze of stoneware has already been described, and the glaze of china also. It is necessary that the painter should know the nature of the body and the glaze.

COLOURS.

The nature of colours used for pottery painting of all kinds may be understood thus: If a mixture of sand, borax, soda, and lead be made, it will be a glaze, as already explained; if it be made so soft as to fuse at a comparatively low temperature, it is called 'flux.' If 'flux' be mixed with any earth or oxide of a metal, such as rust, that is not destroyed by heat, it will make a colour with which a china painter could work with the certainty of his work coming out of the kiln glossy, and fixed by the heat.

Therefore, as a general rule, colours are formed of infusible bases mixed with a flux, the hardness of which usually regulates the intensity or mildness of the fire which is used for their fusion.

As these colours are procured from the colour makers of Staffordshire or Worcester, or from abroad, either in powder or already mixed for use, it is hardly necessary to give receipts for their manufacture, which can be obtained from the various works on the subject.

All these colours must fulfil certain conditions indispensable to their use.

1. They must be fusible at a certain known temperature: they must be unchanged at this temperature.
2. They must adhere closely and intimately to the body on which they are placed.

3. They must present a glossy appearance after they are fired.
4. They must be so perfectly fused as to be impervious to air, water, or gases.
5. They must have the same measure of dilatation that the ware and the glaze have, on or under which they are placed.

It is always necessary to have a colour more fusible than the body or the glaze with which it has to be incorporated; and although in general there is a considerable difference between them, as is the case with porcelain bodies, glazes and their colours, yet sometimes it is a matter of very delicate adjustment, for instance in the case of enamel painting on glass, used to decorate the better class of Bohemian wares.

In the case of soft bodies, as in some kinds of porcelain and faience, the difference is not so great, and some ordinary care should be exercised to guard against the use of hard colour on a soft glaze.

The hardness of the glaze and the colours is a question of utility. It is found convenient to have a sufficient degree of hardness to enable the surface to resist the scratching or chipping, that may be the result of contact with harder bodies than themselves.

The equal dilatation of the colours is a very important condition; it equally applies to the glaze and the body, for it is obvious that if the body in cooling, after it is fired in the glaze kiln, shrink more than the glaze that should exactly fit it, the glaze is broken ridgeways, in crackle lines. More generally 'craze,' or crackle, is the product of a glaze that shrinks more than the body; in this case small interstices are left in the substance of the glaze, to the serious deterioration of the appearance and durability of the vessel.

This is a matter that must be left to the potter; and it is usually the case that the colours are practically fitting to the bodies.

These vitrifiable colours may be arranged under four different heads:—

1. Metallic oxides, forming the most numerous and important class.
2. Earths, white, or coloured by metallic oxides. These are in general body colours; do not glaze by themselves, but receive gloss from the glaze which covers them.
3. Metals in their simplest conditions; they are applied in films, and recover their brightness by being polished.
4. Lustres, which are metals in a state of finest separation or disunion, so that they even reflect prismatic colours.

There are two methods of obtaining colours from the metallic oxides; by one of these the oxide, such as that of copper and cobalt, unites chemically with the flux when it is fused, and forms a homogeneous compound.

With others, on the contrary, the flux is only a vehicle which envelopes the colouring matter and fixes it on to the body.

The colours are composed of various silicates or aluminates or oxides of various metals, and may be arranged under the following general heads:—

BLUES are almost all procured from cobalt, which is used in two conditions—one as silicate, when it produces dark blue, which is heightened or subdued by mixture with zinc, sodium, or potash, and may be thus varied to indigo or grey blue. In its other condition, as aluminate, cobalt produces various shades of blue, green, ultramarine, or turquoise; and by admixture with iron gives various tints varying from light grey to black.

YELLOWS are obtained principally from antimony, zinc, and iron, as oxides are added to qualify and vary the natural colour.

GREENS are obtained from chromium, which is modified by cobalt and alumina.

REDS are iron colours, oxides of various degrees.

BROWNS are formed from cobalt and iron in different relations of combination, modified towards ochre and yellow brown by zinc.

BLACKS are obtained from cobalt and iron; these are intensified with copper and manganese.

WHITES are usually enamels of tin; phosphate of lime is less generally used.

PURPLE, VIOLET, and CARMINE are obtained from gold and tin, known under the old name of purple of Cassius. It is modified by silver to obtain the carmine tones.

These colours, as already mentioned, are so qualified by the flux with which they are mixed, as to be available for various applications to different bodies, and to fuse at different temperatures.

It may be roughly assumed that there are three stages of heat, which are called ordinary muffle heat, hard kiln, and gloss oven heat; and as an assistance to those who may use French colours, the grouping of M. Salvétat, head of the Chemical Department at Sèvres, is appended. The French names are merely translated, and do not necessarily apply to the colours obtained from English manufacturers.

1. Colours for ordinary muffle :

Whites . . . *Blanc fixe* (permanent white).
Blanc chinois (Chinese white).

This latter white will mix with all other colours, and give them opacity and body.

Greys . . . *Gris tendre* (light grey).
Gris roussâtre (russet grey).
Gris bleuâtre (blue grey).

Blacks . . . *Noir grisâtre* (grey black).
Noir brunâtre (brown black).
Noir d'iridium (black).

Blues . . . *Bleu foncé ou d'indigo* (deep or indigo blue).
Bleu turquoise.
Bleu d'azur.
Bleu de ciel (sky blue).
Bleu d'outremer (ultramarine blue).

Greens . . . *Vert bleuâtre* (blue green).
Vert de pré (meadow green).
Vert foncé dur, *Vert foncé tendre* } (deep green).
Vert brun (brown green).

Yellows . . *Jaune pâle fixe* (permanent pale yellow).
Jaune clair (light yellow).
Jaune foncé (deep yellow).
Jaune pâle pour les chairs (pale yellow for flesh).
Jaune orangé (orange yellow).

Yellow browns. *Jaune d'ocre pâle* (pale yellow brown).
Jaune d'ocre foncé (deep yellow brown).

Browns . . . *Rouge brun* (red brown).
Brun roussâtre (russet brown).
Brun de bois (wood brown).
Brun sépia (sepia brown).

Reds . . . *Rouge orangé* (orange red).
Rouge de chair (flesh red).
Rouge carminé (carmine red).
Rouge sanguin (blood red).

Purples, carmines, and violets :—
Carmine dur (hard carmine).
Carmine tendre.
Pourpre.
Violet.

2. The colours for medium heat are the same in name, but are rendered much harder and capable of bearing a much stronger heat by having in their composition a larger proportion of one or more of the oxides.

3. Colours for greatest heat—

Blacks . . .	*Noir de poix.*
	Noir bleuâtre.
Grey . . .	*Gris de fumée.*
Blues . . .	*Bleu indigo.*
	Bleu d'azur.
	Bleu pâle.
	Bleu verdâtre et bleuâtre.
	Bleu turquoise.
Greens . . .	*Vert émeraude.*
	Vert céladon.
Yellow . . .	*Jaune de paille.*
Rose. . . .	*Rose Isabelle.*
Brown . . .	*Brun roussâtre dit écaille* (tortoise-shell).
	Laque rougeâtre ou bistre.
	Brun marron (maroon).

English colours have very nearly the same value, as to their hardness, as the French, and are in general of similar power as pigments.

The following list is extracted from the colours used in the Royal Pottery Works at Worcester, and is appended, as they may be obtained in small quantities by amateurs and others, of certain London agencies.

In all cases it is to be advised to the painter to make a test tile or plate, by putting a small portion of his colours, whether French or English, on to a piece of ware in any order that may seem useful, and then to have it fixed in the kiln in which his finished work will be fused. This will give him a standard of comparison which will be most useful.

The most usual method of setting such a test palette is to divide the rim of the plate, or length of the tile, into a number of small divisions, and then to paint in the first set all the different yellows and their combinations, then red and their combinations, then blue, then brown, and finally black.

WORCESTER COLOURS.

For Enamel Painting.

Blue . .	Azure.
„ . .	Mat.
„ . .	For old Tile Painting.
Brown .	Brunswick.
„ . .	Vandyke.
„ . .	Chocolate.
„ . .	Golden.
Black . .	Soft.
„ . .	Jet.
„ . .	Shining.
Carmine.	
Green . .	Blue.
„ . .	Rose leaf.
„ . .	Dover.
Gold . .	(Prepared ready for grinding).
Maroon.	
Orange .	Light.
„ . .	Dark.
Pink.	
Purple . .	Royal.
„ . .	Ordinary.
Rose.	
Red.	
Scarlet.	
Silver . .	(Double prepared, ready for grinding).
Turquoise .	Imperial.
„ .	Outremer.
„ .	Blue.
Violet.	
White Enamel	Soft.
„ .	Medium.
„ .	Hard.
Yellow .	Persian.
„ .	Hard.
„ .	Opaque.

Colours for Under Glaze Painting.

Blue . .	Mat.
„ . .	Ultramarine.
„ . .	Azure.
Brown . .	Claret.
„ . .	Vandyke.
„ . .	Chesnut.

Brown . . Dark.
Black.
Buff.
Crimson.
Dove.
Green . . Blue.
„ . . French.
Green . . Victoria.
Orange.
Pink.
Purple.
Turquoise.
Yellow.

The metals are used in their simple condition by mechanical disunion being effected by grinding, or by dissolution in acid, from which they are precipitated. The brownish powder thus obtained is treated in all respects as a pigment, ground fine on the slab, and used with the brush with the usual medium. It is fired, and afterwards burnished.

The metals most commonly used are gold, silver, more seldom platina, and most rarely copper.

This method of applying metallic colours is called gilding, and is a perfectly distinct thing from the metallic appearance obtained from a 'lustre.' In this beautiful decoration the particles of metal are so thinly spread as to become iridescent, and the metallic sheen is independent of any rubbing, burnishing, or polishing, but is the pure product of the kiln.

There are several kinds of metallic lustre produced from gold, silver, copper, and platina. In the case of gold the metal is dissolved, and precipitated and mixed with turpentine, and, without the addition of flux, is spread with a brush on the glaze of the pottery, much the same as colour. When fired in a muffle it adheres to the piece, and shines with a bright metallic lustre, which may be somewhat increased by friction with a cloth. Platina lustre is prepared in much the same manner, giving its shady, silvery shine as the result of its firing. Mother-of-pearl lustre, or lustre of Burgos, has the changing rosy and yellow hues that are seen on many shells. It is transparent, but mixing

with the glaze on which it is spread, takes various and most beautiful colours. Sulphur, gold, and potash are the materials from which it is made; it is sometimes seen with circular spots or patches of shining pure gold in tints. These are produced by a simple manipulation. For hard porcelain, lustre is mixed with flux, and spread evenly and as finely as possible over the surface of the china. When it is still soft, that is before it is dry, but after it is set, drops of spirit are scattered on it, or spirit is sprinkled; these drops spread themselves around, dragging with them the lustre, which takes the form of rings, and the material being much thicker here than elsewhere, shows the gold in its brightness not only as an iridescent film; and as metallic gold is here present, the spots are increased in brightness by rubbing with a cloth.

Copper lustre is not dissimilar in appearance, but it is usually more purple in tone. It is seen in its perfection in the wares of the Moors of Spain, in the pieces called Hispano Moorish. Their wares have been unapproached until Mr. De Morgan took up the subject, a short time since; his lustres now vie with, if they do not surpass, those of the old examples.

The lustre cantharis is but seldom used, in spite of its brilliant colours, as the manipulation is very complicated and difficult. It is formed from lead glaze, bismuth, and silver, and the difficult part of the firing process is, that when the piece is hot, it must be exposed to the smoke and vapour of burning vegetables or animal substance. It takes green, reddish yellow, and blue tints. The dangers of the old method of smoking the piece while red hot, by removing it from the kiln for the purpose, led to the abandonment of the process. It is believed that the old methods all included the exposure to the influence of thick wood smoke of the piece while still hot in the muffle. The lustre of lead, or litharge, gives yellow, blue, and green, with yellow predominating.

It is seen on common wares from Germany, and occasionally is produced in this country.

The whole range of lustre ware is one that does not come into the amateur's province. The processes for the production of the pigment itself are too complicated, and the difficulties of firing and developing the sheen of the metal far too risky and uncertain, not only for the amateur, but also, it is feared, even for the potter, to allow these beautiful wares being produced in large quantities. Mr. De Morgan has made the most perfect lustres of the modern age, but only after many losses and after much disappointment.

It is assumed that the china painter will be provided with colours, either those already named, and put into tubes, or with the powder colours of any of the good English manufacturers. These are supplied in powder which has been rendered almost impalpable by thorough grinding and sifting, but in the course of packing, and by the mere effect of lying closely together, the particles stick together so as to seem almost gritty or imperfectly ground.

This grittiness is perfectly removed by grinding the powder colour again on the slab with a muller, with water. When perfectly fine again, let the colour be put in ridges on a slab or a piece of glass to dry. Then the colours may be mixed at once with medium, and used on the ware with no further difficulty.

REQUISITES.

The requirements of a china painter are not very numerous. A table of convenient size and height, well arranged with regard to light, is necessary. The light should be ample and high, extending from the level of the table upwards. It is sometimes more convenient to work with the light in front, sometimes better when the light comes from the left hand.

A 'rest' should be fixed to the table for the painter's right hand and arm to rest on. It is simply a piece of wood from eighteen inches to two feet in length, and five or six inches in width, either with parallel or slightly tapering edges, planed smooth.

This is fastened, but not too firmly, to the table by a screw which passes through its smaller end and through the table, and is fixed in its place by a nut underneath. As this is tightened or slackened the rest is made more or less horizontal, so that the end is allowed to drop to any height above the work or below the table, the artist may desire.

The rest is invaluable for steadying the hand, especially in outlining, or in any part of the work where even, carefully placed lines are required. The tile, plate, or ornament should be held in the left hand just underneath the level of the rest, so that the brush may come down steadily upon it, guided by the right hand, which of course is perfectly steady on its support.

There is another kind of rest in use which may be useful to amateurs, as it can be used with any ordinary table without the necessity of boring a hole through it. It is a narrow piece of wood of any convenient length—eighteen inches is perhaps most useful, and two or three inches wide—with two blocks the same width as the strip, and two or three inches in depth, fixed one at each extremity. This is simply laid on the table, and as it bridges over the ware that is being painted on, supports the wrist, and is convenient, as it can be moved to any position and over any part of the piece that it covers.

A mahl, or maul stick, will be needed when painting on large tiles or plaques that may be used for wall decoration. These must be set up against a wooden support, and worked at in the same manner as a painting on canvas.

In decorating large vases also this mahl stick will be quite necessary.

A glass slab for grinding the colours on: this is usually made of thick plate glass, let into a wooden frame and bedded with plaster of Paris, to a true and firm basis. It is thus protected from chance blows, and is perfectly secure against any uneven pressure from the muller.

Some glass mullers, for grinding the colour: three sizes will be convenient. The smaller ones serve for small quantities of colour.

Some earthenware palettes, as well as six-inch tiles, for the colour will be needed, and two or more strong palette knives.

Brushes are a very important part of the china painter's outfit. He will require several, of different sorts and sizes:—

1. A fine pointed camel-hair, for sketching or outlining the design.
2. Two or three good brushes of different medium sizes, for laying in the first washes of colour.
3. Some shaders.
4. Outline brushes of different sizes.
5. A softener of badger hair.
6. Dabblers, for laying grounds, skies, and all large flat tints.

For working in water-colour, brushes made of red or black sable are the best. For working in oil, camel or marten hair will be found most suitable.

It is very desirable to have different sets of brushes for working in water and in oil, for although, by thorough washing in warm water with soap, a brush that has been used in turpentine may be cleaned from it, and so be made serviceable for working in water, it is scarcely ever fit to be used again for painting in oil, as the hairs become dry and harsh, and seldom work up to a point properly after this process.

A table wheel, for describing circles and curves, and for lining the edges of plates, rims and mouldings of vases, and other uses, must be added to the list of requisites. It is a horizontal circular slab, so placed on a pointed iron rod as to spin or whirl easily and truly when turned with the hand. It stands firmly on a framed base or foot, and is somewhat solidly constructed, for the purpose of being steady while in use.

DIRECTIONS.

In painting a large surface of tiles with any continuous pattern or design, or even when only three or four tiles are placed one above the other, to form a panel of a fireplace, for instance, great care is requisite to match them exactly both for size and colour, for although all the tiles are exactly the same size when they are put into the kiln, the different amount of firing they there undergo causes them to shrink in proportion to the heat they receive—those that are fired most being smaller than those less fired; this necessitates the careful selection from a large number of tiles. Also see that the lines of the sketch are continuous over the lines of junction of the tiles, and that they all meet properly before you commence to paint.

It is necessary, for comfort and clean work, to take no colour on the palette that has not been ground on the glass slab with the muller, and so completely that all grittiness has entirely disappeared. All that should be done on the palette is the smooth mixing with the palette-knife of the colour with the proper amount of the medium that has been selected for use.

Keep all colour, that on the slab as well as that about to be used on the palette, free from dust; for this purpose place an inverted saucer over the colour when it is not in use. All particles of dust cause small accumulations of colour to surround them on the work, and in firing are fixed as dark spots. Particles of

wool from the wear of carpets and woollen dresses are quite as injurious as grit, and form what is called 'lint' in the colour.

Scrape the colour towards the centre of the palette, and thus avoid the waste and untidiness that is produced by allowing it to run to the edges.

It is wasteful to mix more colour and medium than will be needed during the time of work, as if mixed with oil, it becomes too 'fat' or oily by standing exposed to the air, and will be quite unfit for use in twenty-four hours.

Keep all brushes scrupulously clean by washing them in turpentine after use, and carefully smooth the hairs to a point before they are put away, in order to keep them even and in right condition for future use. If kept in a case or box it is well to guard against any bending back of the points from pressure, as such an accident will render the brushes useless.

Stipplers, softeners, and dabblers should be washed out in soap and water, as they must be perfectly free from one colour before they are used for any other, and it is very difficult to ensure this cleanliness with the washing in turpentine only, in the case of such thick brushes.

Be sure that they are perfectly dry before they are used, or the surface of colour to which they are applied will be made streaky and uneven.

It is a small matter, but one of great comfort, to have all the sticks for the brushes of good length, and well fitting into the quills.

When sitting to paint the artist should endeavour to maintain as upright a position as possible. It is the easiest attitude, and one that gives opportunity of making good use of the 'rest.' Avoid the habit of stooping over the work. Very little fatigue is perceived after a day's work, if this is constantly borne in mind.

It is important that, in the selection of any piece of ware, a sound piece should be chosen. If flawed, or in any way not

quite perfect, there is danger that it may 'fly' or break when exposed to the heat of the kiln, which means that the labour bestowed on the piece is wasted.

Glazed china and earthenware that has become soiled may be washed in warm water with a little soda before being painted on. When thoroughly dry, the part to be operated on may be wiped over with a little turpentine: it will aid the flatting of the colour, and assist the artist in his efforts to 'lay' it.

When painting plates or plaques, finish the centre before commencing the border, as it is impossible otherwise to avoid rubbing the edges.

The above are, in the fewest words, the materials that the painter will require. The methods of using them now have to be mentioned.

MANIPULATION.

First, the word medium has been mentioned. A medium, in an artistic sense, is any material that will assist the mechanical placing of the colours on the surface to be painted, or will assist or retard the drying of these colours so as to make their manipulation more easy. With the china painter a medium has precisely the same office.

As there are two distinct systems of painting, viz. in oil or water, there are two distinct classes of mediums corresponding with these.

Oil mediums may be used for over-glaze and for under-glaze work; water mediums the same.

Oil medium consists commonly of spirit of turpentine and turpentine which has assumed a condition of viscidity and thickness called 'fat' by the professional painters. It is prepared in the following manner:—

Pour a few drops—about half a teaspoonful—of turpentine into a clean saucer, and let this stand exposed to the air, carefully

protected from dust. The spirit evaporates from the liquid in part, and leaves a thickened, syrupy fluid. Add a few more drops of spirit every day, until enough has accumulated for use. This change in the condition of the turpentine cannot be hastened by heat, as exposure to a high temperature causes so rapid an evaporation that the whole passes off as vapour. The process is much retarded if too much spirit is put into the saucer at one time.

If tube colours are used there will be no necessity for this manufacture, as they are prepared with the right quantity of medium mixed for immediate use.

Another medium is spirits of tar. In the same manner as that just described, it too may be made 'fat.' This is used with the ordinary spirit of tar as a dilutent, exactly as the ordinary turpentine is used to cause it in its 'fat' condition to flow more freely.

For under-glaze ware, where there is much absorption, common olive oil may be used, but is not to be recommended.

In water-colour painting on china, any material that will hold the particles of colour together will serve for the purpose of a medium. Gum is the one usually used, and may be added to the colour as gum-water or as a fine powder, which can be mixed with the dry colour in proper quantity.

Pottery is coloured in many totally different ways. For instance, the body may be tinted to any colour within the range of pigment by mixing the pigment with the clay of which the pot is composed. This gives either an even tint or a mottled one; and some of the most beautiful of the Wedgwood and early Staffordshire ware is produced by mixing, and pressing, and moulding together various coloured clays or bodies, which are then shaved in a lathe to cut off the surface of these different tints truly.

Another way is to tint the glaze. This, too, usually gives an even tint, but may be made to produce certain pleasing effects

by the different thickness of the glaze, which will be darker in parts that are sunk or hollowed. Modelled tiles and plaques are sometimes dipped into coloured glaze, when the varying thickness of the glass produces the effect that is sought.

There are also the various methods that are distinctly related to the painter's means, inasmuch as the colour is applied with a brush. The whole subject of ground laying is too large to be more than hinted at here, but among the most practical plans these may be mentioned:—

It is clearly a tedious, and sometimes a difficult thing, to lay a flat background between the spaces of some elaborate design, such as a mass of foliage, or a geometric pattern.

This may be effected by painting the pattern with a stopping-out composition, composed of gum or size, and chalk, coloured to any convenient tint with ordinary pigment, and then laying on the ground with a large brush, with perfectly flat and even colour over everything. When the vessel thus treated is washed or soaked in water, the stopping-out composition dissolves, and the background alone remains.

Another plan for obtaining a perfectly flat tint is to paint the surface to be coloured with medium, that is—in fat, oil, and turpentine, exactly as a gilder prepares his ground for the reception of the leaf gold; this preparation, when half-dry, is then dusted over with very finely ground powder colour with a piece of cotton wool, which strews the film of dust perfectly smooth and even.

This method may be used with the last-named stopping-out material.

These manipulations give absolutely flat grounds or tints; so flat, as to be often inartistic. They are, moreover, somewhat intricate, and require considerable practice before they can be done expertly.

The French method is usually followed in English faience painting. It is performed by laying a wash of colour mixed

with medium as flat as possible with a broad brush; then the whole surface of the tint is gone over with a flattish stumpy brush, called by English china painters a dabbler, by the French, 'Putois.'

The process is simple, and requires only care and steadiness of manipulation.

The tile, plaque, or ornament is washed over with the colour required as evenly and quickly as possible; then, before it begins to dry, the 'dabbler' (which must be perfectly clean and dry) is rapidly and lightly passed over the whole surface, by a dabbing, stippling motion, until it presents an uniform smoothness and evenness of tint. It is evident this method of laying a tint is very useful, not only for grounds in conventional designs, but also for skies, the laying in of landscape masses, and for any clear, even, or graduated tone in flesh or drapery.

Various degrees of softness and smoothness can be attained by varying the consistency of the colour employed, and also by continuing the dabbing process until the colour is quite dry, in which case, if done carefully, it becomes very fine and smooth in surface.

It is well to bestow extra care on the mixture of the colour with the fat oil and turpentine, so that it will flow easily over the surface of the tile or ornament, and not dry too quickly.

It materially assists the flatness of a tint on a large surface, if a few drops of oil of aniseed are mixed with the colour.

PAINTING OVER THE GLAZE.

In painting on china, earthenware, and all 'over-glaze' ware with enamel colours the procedure is as follows:—

The design, of whatever kind, whether heads, landscape, flowers, or conventional ornament, must be sketched carefully on the piece to be decorated with Indian ink, and a fine brush. This or any other vegetable water colour may be used, or the design may be traced and transferred to the ware by means of a

piece of red transfer paper or other similar mechanical contrivance. If tracing is resorted to, it must be done in the following manner:—Make a very accurate and careful tracing of the design on tracing paper with a hard lead pencil. Place the transfer paper between this tracing and the tile or plate, and go over each line with a transfer point—of metal, ivory or agate, or hard wood. When completed and the paper lifted up, there will be found on the tile a red or other outline, which need not be removed when done with, as it will completely disappear in the firing. Let it be carefully noted that no traced outline is so good as to do away with the necessity of drawing the whole design afresh in the colour.

Another plan, often made use of, is that of pricking small holes through the tracing paper wherever there is a pencil mark: this can be done with a pin or a needle on a green baize table-cover, or any other soft thing underlying it.

When finished, keep the tracing thus treated closely pressed on to the tile and rub some finely powdered black chalk or charcoal all over it with a lump of cotton wool, or a roll of flannel or fine cloth. The powder passes through the small holes in the tracing paper, and leaves a dotted outline of the design clearly visible on the surface of the ware when the tracing paper is removed. This frail outline can be made more definite and fixed by the Indian ink outline or by one of colour.

The artist who can draw with facility will have no need of such mechanical contrivances, but will sketch the subject at once in the Indian ink.

When this is dry, the painting may be begun. Amateur painters will feel some difficulties, no doubt, at the outset; it is therefore, perhaps, necessary to go a little into detail, at the risk of being tedious.

The first great care—and this ought to be printed in italics—must be to see that the colour is thoroughly ground on the slab

with a glass muller (unless the artist use the French tube colours, which are ready mixed and prepared) until every trace of grit has disappeared. A small quantity of oil of turpentine or water may be used in this grinding. If water is employed, it must be done some hours previous to the painting being done, in order that the colour may be perfectly dry, or it will not mix with the oil.

Then mix a sufficient quantity of the required colour upon the palette, and add enough turpentine and fat oil or other medium to render it of proper consistency.

It is at this point that those artists who are painting for the first time on china find a difficulty in their way. And it is really not easy to explain in words the exact quantity of medium necessary, and after the most elaborate explanations it can only be learnt by experience.

However, some hints may be useful, as some simple tests may be applied to save the bad consequences which are sometimes irremediable after the piece is fired.

Therefore notice if, after the colour has been laid on, it dries very slowly and presents a very shiny appearance, or shows a tendency to flow over the outline; if so, the artist may feel sure that too much of the thickened turpentine, or 'fat,' as it is called, has been added to his colour. Should the piece be sent to the kiln in that condition, the probable consequence would be that the colour would 'boil up,' as it is commonly described, and present, instead of a smooth glassy surface, a series of rough bubbles or excrescences, which would require to be scraped off, and necessitate the repainting of the design, at least in part.

If, on the other hand, the colour as mixed on the palette is difficult to lay on smoothly, dries very quickly, and looks dull and rough afterwards, it shows that too small a quantity of 'fat'

in the medium has been used; and although the consequences of this error, so far as the firing is concerned, are not serious, yet it will be almost impossible to get the painting into a good state for finish; for the colour of the second painting coming over this unkindly surface is likely to remove some of it, or at any rate to prove stubborn and look rough and uneven.

Now when the colour is proved to be of the proper consistency, the brush must be well and evenly charged with it, and passed over the surface of the piece broadly and quickly, keeping the hairs spread and in a flat position as much as possible.

When the first wash of colour has been laid over the design, it must be left until quite dry before any attempt is made to shade it or deepen the tint in any way.

Should the first wash of colour not appear sufficiently smooth or even, however, the brush may be freed from colour and passed gently and quickly over the whole surface while still quite wet, for the purpose of smoothing out the ridges or wrinkles of colour which the edges of the brush may have left on it.

As soon as this first tint is perfectly dry, another may be laid on it and again left to dry, and when the design has been in this way completed in its various stages of shading towards finish, an even outline may be added throughout the whole painting, usually of a shade of colour darker than the average tint of the design. This outline gives definition and vigour to the painting, and gives a certain relief to it. A long-haired brush called an 'outliner' is used for this purpose.

If a tinted ground is required to any floral, conventional, or other design, as is frequently the case, it may be laid in the manner prescribed previously, by the process of dabbling, after the design has been sketched in with Indian ink; but as it is almost impossible to avoid dabbling over a part of the design or indeed sometimes over most of it, should it be at all intricate

or closely filled in, it is wise to make the ink outline very clear and distinct. If this is attended to, the dark outline can be distinguished with sufficient clearness through the dabbled ground, even when quite dry. When this is the case the superfluous colour can be carefully scraped off with a penknife; thus leaving the ground tint only where it is required, while the design is simply the clear white of the tile, or colour of the body of the ware, ready for painting.

It stands to reason that if the outline has been pounced through the tracing paper, that it must be gone over with the strong Indian ink outline before the grounding process commences, otherwise it would be completely lost in the dabbling.

All these difficulties could best be met in the case of a beginner by practice with one colour, such as common red; it is a very easy colour to lay on the ware, and is on this account a good pigment for the purpose.

A six-inch tile may be used: on this sketch a design, or a spray of foliage, then attend carefully to the points already mentioned, such as the grinding and mixing of colour, and lay on a pale tint over every part of the design; allow it to dry, and then put in the shadows broadly, with a deeper tint of the red, remembering to hold the brush so that it works into a flat position to avoid ridgy lines and brushmarks. When this is dry the finish may be added with the outline, and the tile may be laid aside in some spot free from dust, to dry thoroughly before it is sent to the kiln.

In painting flowers and foliage on china or earthenware, the same general plan has to be observed. For such a subject prepare a palette with a small quantity of these colours, viz. orange, green, blue, and brown, and commence by putting in the lightest tints of the leaves first, wherever they are required, such as the grey blue of a shiny leaf when seen in the light, or

the bright warm yellow of the same leaf when the light passes through it. Always put the lightest first. Tone the green with orange for yellowish green, and with cobalt if a colder tone of green is required.

It is best not to go over the whole of the leaf with this lightest colour, but to put the tints down clearly where you see them in your copy, or in the natural leaf that is being imitated, leaving the rest of the leaf free for whatever colour it possesses. Care must be taken to avoid making a ridge or a strong mark where the different tints meet. When the whole surface of the leaf has been covered in this way, it must be left to dry.

To avoid delay, a clean palette may be taken and 'set' for the flowers, and the first or lightest wash laid on thinly in the usual manner. For the highest shining lights the china may be left clear, the colour being of course softened to nothing as it approaches the light, unless the petals are very shining. It is perhaps less difficult to paint them all over with the palest tint, and finally, when the colour is quite dry, to take out the high lights with a penknife.

While the first wash on the flowers is drying, the artist may return to the leaves, which, if quite dry, are now ready for shading.

The proper shades of brown, olive green, &c., for this purpose, may be easily obtained by judiciously mixing the necessary colours; for instance, deep olive green can be made by mixing green, orange, brown, and red.

Greys of different shades are made by brown and blue; or brown, blue, and green; or brown, blue, green, and pink. Put these n in very faint washes.

For the serrations of the leaves, the stems, and general finishing, purple brown is in many cases very useful. It also

serves as an excellent outlining colour, either alone, or mixed with common brown.

In painting birds, which are frequently added to the semi-naturalistic treatment of faience in the present day, to give interest to the composition, it is well, after the sketch in Indian ink has been finished, to draw in the bill, eye, wings, and feet with care, with black, brown, and grey. The washes of colour most resembling the natural mass of tints may then be laid in, and left to dry perfectly, before the details of the plumage are put in, and the finishing touches added.

The same advice applies to butterflies, which are useful as bringing points of strong colour into a design, when this is done with judgment and taste. These require but few colours, and are for the most part quickly observed and painted.

In painting a head, commence as usual by the careful outline in Indian ink. Let every detail be thoroughly drawn in this material before beginning the enamel colour.

Allow of no appearance of carelessness or erasure, or uncertainty in form to make itself visible in this stage, as all such imperfection runs great risk of being much increased in the final drawing.

If the head be on a round plaque or plate, and it is thought useful to have a background, it is best to lay it in at once before beginning to colour the face. The arrangement, colour, and design of this background is of course dependent on the taste of the painter. In general, drapery or foliage may be used with good effect; or it may be simply grounded with some colour that will either harmonise or contrast with the prevailing tones and style of the head, or some diapered or tapestry design may be worked over it in self-tones or in contrasting ones.

In all cases remember that a background is a thing to be behind the head, and should therefore be clearly a secondary

feature in the picture. Detail, however neatly drawn, should be sacrificed to this great necessity. Another point is that the background should, for decorative effect, be either darker or lighter than the head-tone, so that the head detaches well, and does not 'swim' in the background.

The colours used for the face are pale tones of yellow for the lights and lightest parts, flesh red and yellow brown for stronger local colour, with more flesh red for the cheeks.

As before, proceed by laying in large washes of colour; and when these are dry the shadows can be deepened, and the middle or half-tones properly graduated, and the whole harmonised. Here again, purple brown may be used with good results in drawing the lips and nostril over the tones of red that have been used for them.

The hair may be laid in broadly with the required colour, and a softener or dabbler used whenever required.

Remember that flat tints, made so at once in the first wash, are to be preferred to those rendered artificially flat by stippling.

Drapery also must be painted broadly and simply; the lights are perhaps the best to begin with, then the local colour, then the deep half-tone and the shadow.

Be quite sure that the shadow of a coloured drapery is not the deepening of the local colour—that, for instance, blue drapery in folds is simply graduated blue; it is not, but is a colour that constantly changes, towards a neutral value of blue, frequently towards brown, and it may be to violet.

Skies are, of course, laid in on the same general principles as those above mentioned. Be careful not to make the greys too cold, as there is sometimes a tendency in them to darken and turn towards a green tint in firing, that is disagreeable.

Blue, brown, and pink, mixed in varying proportions, produce greys. Be careful of the edges of clouds, to see that they

are well drawn and not too hard, and use a flat brush with but little colour in it to improve these edges. A little green with the blue will give the steady look of nature's blue sky, and remove the porcelain effect of the cobalt alone. All these works, painted in enamel on or over the glaze, may be fired more than once, and indeed in the finer kind of soft enamel work twelve firings are not uncommon; but although a second and even a third firing may be useful, there are risks of the fading of colours, from repeated fires, that render it undesirable that that number should be exceeded.

Still, it gives the artist confidence to remember that the second painting will take the finish, and he may therefore with confidence lay in large washes of all his tones for harmonious working together in his second or even third painting and firing.

The artist will not feel any great difficulty in the unlikeness of the pigment when it is put on the ware to the colour it will develop into in the kiln, as, with the exception of cobalt and pink, the colours appear very much the same on the palette and on the ware when fired.

A final caution is necessary to those who have had but little experience in this work. It is to see that the pigment is put on to the ware in proper quantities from the brush; a line or tint may seem well covered, and yet burn away in the kiln, if it is not laid in with sufficient pigment to resist the heat; another tint may scarcely look darker on the ware, and yet come from the kiln opaque and heavy, from having been overloaded with pigment.

The above directions may also be followed if water with a little gum is used as the medium, instead of turpentine.

PAINTING ON THE 'BISCUIT,' OR UNDER THE GLAZE.

The term 'biscuit,' as has been before explained, is applied to the ware in its unglazed condition. There are as many varieties of 'biscuit' as of pottery ware, and they vary in texture, smoothness of surface, and powers of absorption, almost infinitely. In fact, all ware that is glazed by a second operation is at one stage of its manufacture in a state of biscuit. The art of colouring upon this ware is somewhat different to that of overglaze ware. The colours are harder, not in themselves glossy, but take their full development from the glaze that is placed over them, which gives them softness and transparency and a mellowness that is not reached by any over-glaze colours at present in use.

The biscuit is of dull porous surface, of any colour that the clay of which it is made will develop in the kiln, and may be anything from white to black.

It takes the mark of a lead pencil or a piece of charcoal easily, and is not unlike fine drawing paper to work on.

Here, too, either water or oil may be used as a medium. If oil is selected—and it is the more useful—then the ware must be sponged over with some material that will render it less porous, and give a more convenient texture for the brush to work on; it also renders it smooth and soft, by removing the harshness of the dull, raw, absorbent surface.

This is effected by rubbing the surface of the ware with ordinary size, or treacle (golden syrup), or a solution of gum tragacanth.

If, however, water is used as a dilutent for the colours, then it is not necessary to stop the absorption of the piece, but some of the size, or gum-arabic, must be mixed with the colour on the palette instead.

When turpentine or tar is used as a dilutent, the 'fat' oil is employed as a medium in the same manner as in painting over glaze on earthenware or china. It will be found in general that a larger quantity of fat oil will be necessary with the under-glaze colours to make them work smoothly and easily. As there is not the same danger of 'boiling up' to guard against, in this case, as in over-glaze painting, the medium may be used as freely as is desirable, without any ill effects resulting.

The directions for the actual application of the colour to the ware that have been already given in the enamel painting instructions will apply equally to the painting on the 'biscuit,' and therefore need not to be repeated here.

Dabbling, however, cannot be resorted to with the same ease, as the colour is apt to dry before it has been wrought into smoothness. To render this difficulty less embarrassing, care must be taken in the first place to have the ware well sized; in the second, mix plenty of fat oil with the colour, lay it on rapidly, and use the dabbler very quickly over the whole of the coloured surface. It is an advantage to use rather a stiffer dabbler than for over-glaze. Grounds may be moderately well laid with a large brush, without the dabbling process at all; it is only necessary that the colour should be well mixed, and have sufficient fat oil to render it easy of application, and to allow it to run together slightly.

Great care must always be taken in painting on the biscuit to prevent any colour spreading too far, as it is very difficult to efface any colour marks from the ware in this condition. A tint that is found to be too dark may be lightened by rubbing off the surface colour with a rag or sponge moistened with turpentine, but the ware can never be thoroughly freed from colour when once worked over.

In painting flowers on the biscuit, or under the glaze, the

beginner will experience a considerable amount of difficulty from the fact that most of the colours used for this work do not bear the least resemblance to the tints they represent before firing.

For instance, a deep blue, such as cobalt, appears, in its state of powder, a brownish grey; a turquoise blue resembles slate colour, and so on: thus the artist must rely on his knowledge of the pigments and draw a little on his imagination, in order to realise and then carry out his ideas respecting the colours and greys of his flowers. It is well to keep the pots or packets of colour distinctly marked, and also note what colours are on the palette.

In general the tint of the ware to be painted on is lower than white in tint, usually of a warm grey, and deep enough in tone to cause opaque white enamel to appear in bright relief upon it. This white enamel bears the same relation to enamel painting that opaque white does to a water-colour drawing. It requires to be put on thickly, so that it stands up on the surface of the ware, or has an 'impasto,' to use an artistic term. Care must be taken not to render it too liquid, or saturate it too much with the fat oil, as, under such conditions, it may run down the surface of the ware, and blur or destroy the outline.

It is used for high lights, and must be applied carefully and thickly. In order to do this, have the colour on a clean palette, thoroughly mixed, add a little fat oil to make the mass smooth, but not enough to render it liquid. Take a clean dry brush and dip only the tip of it into the mixture, taking up a small piece at a time, which transfer quickly on to the part requiring it. Never allow the brush to get soaked with the enamel, which clogs it, and prevents its working smoothly and finely.

The green that is made of claret brown, common brown, and black must be put on rather thickly, as it fires out to a great extent.

A fine olive green is made with green, orange, and claret brown; a purple, with two parts of manganese brown and one of cobalt.

As the mode of painting flowers on the biscuit differs very little from that in use for their application to china or earthenware, a repetition of the methods need not be made. Any errors in the laying on of the colour bring about similar results in both cases. If the colours are put on too thinly they fire out; if too thickly they will not take the glaze, and look dull in consequence: sometimes they will even blister, and they are always heavy and dry.

In painting heads on the biscuit it is well to remember how important it is to have an accurate drawing, which may be made with pencil or charcoal, or with lithographic chalk, on the tile or plaque.

The background is next to be laid on as far as possible. No definite directions can be given as to style and colour of the background, for it depends on the artist's feeling and taste. It may, of course, be a sky of any tint, distant landscape, foliage, or drapery, or anything else, and may be a simple flat wash of colour or an evenly graduated tint of two colours. The points to be aimed at are such a harmony of colour as may agreeably assist the colour of the head.

The flat tints already noted may be used for these background tones, such as the turquoise blue flat tint, which, with a darker pattern of dark blue running over it, would contrast with a strongly painted head.

The olive green above mentioned may be very effectually used, also the purple, made with manganese and cobalt.

When this is laid in, wash in the large tints of the hair and drapery broadly and quickly, and then leave them to dry.

It is to be remembered that biscuit, when dipped in glaze

and fired successfully, comes from the kiln a piece of glazed ware, which can be used as a basis of a complete system of over-glaze or enamel colouring afterwards. This gives the artist a double chance of obtaining his ends; as the softness of the under-glaze effects is secured by the first firing, while the colours not applicable to this system are applied afterwards over the glaze, always, however, with a certain loss of brilliancy and clearness in the glaze and colours.

In working at the face two different plans have been adopted. Some painters on the biscuit find it best to put in only the shadows of the face for the first firing, reserving the flesh tints for the second painting with enamel or over-glaze colours, of which there is a great and almost perplexing variety. Others put in not only the shadow but also the flesh colour at once, modelling them with darker tones, and dabbling or stippling them together while they are wet, until the proper forms have been developed.

Heads painted on the biscuit almost invariably require two firings at least; therefore finishing touches are not usually or necessarily put into the first painting. It is always well, however, to do as much as possible for the first firing, in order to preserve the general tone and quality of the piece.

The second painting, being done with over-glaze or enamel colours, is fired at a lower temperature than the glaze; it often has the disadvantage of dimming the lustre of the first glaze a little, as has already been remarked.

For under-glaze work the shadows and general modelling of the face may be of manganese brown, which fires to a warm, reddish tint; it is very easy of manipulation, 'lays' itself flatly, and is graduated to a softened imperceptible edge without difficulty: it may be laid in strongly, as somewhat is lost in firing.

An under-glaze flesh tint may be made of claret brown, and the same, mixed with common brown for shadows, may be used

with good effect. It must, however, not be put on strongly, or the face will appear too red.

Always outline a head clearly and strongly for the first firing. Great care is here necessary, as the drawing of the head depends on this part of the work, in every part of each curve and line being well formed; every detail of the features may also be outlined, but less strongly. Common brown or manganese brown will serve for this part of the work.

If the outline fires out at all seriously in the under-glaze kiln, as is sometimes the case, it must be re-applied of the same tint in enamel colour.

Gilding has already been mentioned; it is always applied over the glaze.

The foregoing remarks on under-glaze and enamel painting apply, as to the processes and the colours named, to earthenware principally, for the china body is not only in itself harder than earthenware, but has a harder glaze, with which many enamel colours have so little in common as to almost fail to adhere, and certainly frequently are found to look far from rich and glossy.

LINING.

Plates, vases, cups, and many other things require to be finished off with lines around their edges or their mouldings, or between any divisions of their forms. It is done upon a whirler or table-wheel, something like a potter's wheel, which is a round slab moving freely on a pivot. The plate or vase is placed exactly in the centre of the horizontal circular slab. The operator then, with his right arm leaning upon the wooden rest at his painting-desk to ensure perfect steadiness, applies a brush charged with the required colour to the edge of the piece to be decorated, slowly moving the wheel with the piece on it with his other hand. By this simple means a line of any fineness or breadth can be made.

FIRING.

A few words about kilns may be interesting.

With the kilns of the potter we have nothing to do, more than to remark that they are of every shape and inclination, with the ground from vertical to horizontal; that they are of all sizes, from three or four feet in diameter to twenty-four; that they are being varied in construction every day by skilful potters, to obtain better results for the fuel they consume.

The pottery painter receives his biscuit or glazed ware in more or less perfect condition from these kilns. With those in which his work is fired he has more concern.

They are all on one principle. A fireclay box is constructed; the fire is made underneath or at the side, and has flues by which the heat circulates around the box until the required heat has been reached. The principle to be observed is that the fire has no sort of direct impact on the painted ware; on the contrary, a crack in the kiln is often very destructive, as it allows sulphur from the fuel to find access, to the serious damage of the colours, which are blackened by it.

These fireclay boxes may be of one piece, such as the little kilns that dentists use for fixing the colouring of artificial porcelain teeth, or may be built up elaborately, so as to be twelve feet deep and six or eight high. In all these cases the fire is kept carefully from the contents of the muffle, as it is called, and the heat of the fuel is communicated to the ware through the walls of the inner box, so that the whole becomes a glowing mass of red heat. The filling of the kiln is a matter with which the professional potter is more particularly concerned, but various props and pillars and slabs, forming floors to little horizontal divisions, are used and built up inside the muffle with the ware to be fired, and considerable ingenuity is shown in the close

packing necessary in these kilns. When the fire is lighted the heat is allowed very slowly to penetrate the mass of fireclay of the muffle and its contents, and it is sometimes not allowed to attain its full heat for a whole day and even more, when the bulk of the kiln and contents is considerable. The door of the kiln is either an iron plate, inside which a firebrick wall is built or not, according to the size of the kiln; through this door a hole is made, which is covered with a lid or a stopper, and through this the 'tests' are drawn from time to time. Carmine is a colour composed of gold, and tin, and silver. In the progress of the development of this pigment in the kiln from its raw state to its full beauty, certain changes go on, for at the beginning of the fire, when all is at a low heat, the silver predominates and the red is feeble, a dirty, dark yellow tint being the prevailing colour. At the proper point the carmine is in full power in all its beauty; with an over fire the silver is destroyed, and the result is the carmine becomes cold in colour, inclining to lilac or violet. This is the reason why the 'test' is made of carmine. It is simply applied. Small pieces of ware, such as a broken tile or plate, are painted with a brushmark of carmine, and have a piece of wire twisted around them, so that they can be easily seized with a hooked rod. These are placed in different parts of the floor—that is, opposite to the hole in the door that has been mentioned—and are brought out from time to time as the kiln approaches its full fire, until it is seen that the colour is fully developed. When this is the case the fire is raked out, and the kiln allowed to cool slowly. Any sudden accession of cold air to the hot pieces is to be carefully avoided, as it has the effect of at least causing the glaze to 'craze,' that is, crack all over in small cracks. This is due to the different textures of the body and the glaze. They have different rates of receiving or giving out heat; so all must go on slowly together, to keep them

sound. A very violent admission of cold to any hot kiln may break the vessels themselves.

The firing of patterns painted on the biscuit, or under the glaze, is somewhat different when painted in oil; the pieces have to undergo a slight firing up to dull red heat, to expel the oil and dry up all greasiness from the turpentine. This is called the 'hardening on' kiln, and must precede the dipping of the pieces in the glaze tub; for as the glaze is mixed with water, and the surface of the painted ware is greasy, no contact between the two would be possible, until the greasiness is first burnt out. The body of any piece must be more or less absorbent when it is dipped, in order that a certain quantity of the solid part of the mixture should adhere to the body of the pot. This is instantaneously done by the absorption of water from the mixture which separates from the glaze closely surrounding the piece, in the tub, and which in effect coats the vessel with a film of glaze in moist powder.

Many other things connected with pottery could be written about, but the limits of this small work prevent even an allusion to them. The small part of the subject that has been here considered is in itself so interesting, that it is difficult not to attempt to enlarge it at all sections of this handbook, until it should be a work worthy of the art of Pottery, but that is impossible.

A recent writer* says: 'It is no very easy thing to make intelligible to those who have no love for pottery, who take no delight in curious and beautiful pieces of china and earthenware, how it is that very many of their fellow-mortals—not altogether despicable persons—are possessed of an enthusiastic liking for these things.'

The truth is that the causes of the prevailing love for old china lie both deep and wide. To the antiquary, to the student

* Ludwig Ritter.

of past history, there is this attraction in the ceramic art, that its productions more perfectly adapt themselves to the fashion of thought, to the fancies and ideas of each successive generation of men, than those of any other human industry.

Pottery owes nothing of its beauty or its serviceableness to its material—for that is but the dust beneath our feet—and everything to the hand that fashions it, and to the mind that directs the hand; so is it that it comes to have so purely human an interest: it is a bit of man's work, with no adventitious aid whatever. If the form is beautiful, or quaint, or ugly, or commonplace, it is that the plastic clay has followed and exactly reproduced the conception in the maker's mind; it is formless without coherence, and all but colourless; it takes the form, and the consistency, and the colour, that are ideal with the man who transforms the grey earth into a piece of pottery, and when he has done this, his handiwork lasts for ever.

Coins rust with time. Statues of marble and bronze crumble or are corroded; inscriptions are obliterated; stone walls fall to the earth, and the pyramids themselves are slowly disappearing. Every monument that mankind have thought most lasting yields to time, except the work of the potter.

The most frail of man's productions is yet the most permanent. The glorious tints on the majolica ware are still as bright as when they were drawn from the kiln, while the pictures of Raphael and Leonardo, painted in the same generation, are already fading. We have perfect specimens of Greek pottery that cannot be of a later date than a thousand years before the Christian era. Glazed mural tiles have been discovered among the ruins of Babylonian palaces, still bright enough to decorate a king's chamber; and in the catacombs of Egypt are found glazed figures of Ra the Sun God of Anubis, and of the sacred

Scarabæus, as pure and brilliant in colour as the latest production of Deck or Minton.

While this permanence and the peculiar plasticity of its material make the study of ancient pottery indispensable to the archæologist, and interesting to every intelligent person, its potentiality for extreme beauty of form and colour recommend it to all who possess any degree whatever of æsthetic appreciation.

In regard to form-beauty, it is enough to mention the exquisite proportion of the classical vases, amphoræ, and cylices, the rich and various shapes of early Italian wares, and the more learnedly elaborated forms of the pottery of the Renaissance period; and of colour it is enough to say that the precious imperial red of ancient China vies with the ruby in brilliancy and depth; the blue of the turquoise is exactly repeated on the blue crackle ware of China, while the pink and dark blue of the *Rose du Barry* and the *Bleu de Roi* of Sèvres, the rare Chinese apple-green, the exquisite tints on the ancient wares of Persia and Japan, are hardly equalled in the various qualities of depth, intensity, brilliancy, and tenderness by any colours in nature or in art.

The production of each one of these hues is a past triumph of invention and of applied science, and in the history of pottery is bound up the strong human interest furnished by the lives of the men who have advanced the art—the Della Robbias, the Palissys, and the Wedgwoods—men of science, artists, inventors, and endowed with the care, patience, energy, and devotion of true genius.

Such being the attractions afforded by the study of the ceramic art, it is no wonder that it is popular, and that its popularity increases with the intelligence of the age.

If it were allowable to cite names, those of many foremost

statesmen at home and abroad, of many great lawyers, of many men eminent in letters, and of many of our first artists, might be given as lovers and students of ancient and mediæval pottery. Mr. Gladstone at least may be quoted among the list, since he has not scrupled in a public speech to avow himself a keen amateur of fictile ware; the right honourable gentleman indeed is well known to be an enthusiastic and discriminating collector of the wares of Wedgwood and Northern Italy.

Whether we have any leaning or not towards the ceramic art, whether we really care for it or do not, it is the fashion to know something about old pottery. It has got to be a mark of inculture to be wholly ignorant, and to have at least read up 'Marryat' or 'Chaffers' has almost become part of a liberal education."

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Crimson-Purple (*Pourpre cramoisi*)	1 9
Deep Purple (*Pourpre riche*)	1 6
Ruby-Purple (*Pourpre rubis*)	2 0
Relief (*Relief*)	0 6
Capucine Red (*Rouge capucine*)	0 8
Flesh No. 1 (*Rouge chair No. 1*)	0 8
Flesh No. 2 (*Rouge chair No. 2*)	0 8
Flesh, Deep (*Rouge chair foncé*)	0 8
Laky Red (*Rouge laqueux*)	0 9
Orange Red (*Rouge orangé*)	0 9
Grass Green No. 5 (*Vert No. 5, pré*)	0 8
Brown Green No. 6 (*Vert No. 6, brun*)	0 8
Dark Green No. 7 (*Vert No. 7, noir*)	0 8
Green No. 36 T (*Vert No. 36 T*)	0 8
Deep Blue-Green (*Vert bleu riche*)	0 10
Chrome Green 3 B (*Vert chrôme 3 B*)	0 8
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Green H 24 (*Vert H 24*)	0 8
Apple Green (*Vert pomme*)	0 6
Deep Green (*Vert Russe*)	0 8
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Light Violet of Gold (*Violet d'or clair*)	1 0
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Coral (*Corail*)	0	6
Isabelle (*Isabelle*)	0	6
Chinese Yellow (*Jaune Chinois*)	0	6
Fusible Lilac (*Lilas fusible*)	0	8
Maize (*Maïs*)	0	8
Mauve (*Mauve*)	1	0
Pompadour Pink (*Rose Pompadour*)	1	0
Salmon (*Saumon*)	0	8
Turquoise Blue (*Turquoise bleu*)	0	10
Turquoise Green (*Turquoise vert*)	0	10
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Yellow Brown (*Brun jaune*)	0	8
Platina Grey (*Gris de platine*)	6	0
Light Yellow (*Jaune clair*)	0	6
Deep Yellow (*Jaune foncé*)	0	6
Dark Yellow (*Jaune obscur*)	0	6
Gold Yellow (*Jaune d'or*)	1	0
Manganese (*Manganèse*)	0	8
Maroon (*Marron*)	0	8
Black (*Noir*)	0	6
Iridium Black (*Noir d'iridium*)	6	0
Orange (*Orange*)	0	8
Pink (*Rose*)	0	10
T Red (*Rouge T*)	0	8
Deep Green No. 1 (*Vert foncé No. 1*)	0	9
Light Green (*Vert tendre*)	0	8
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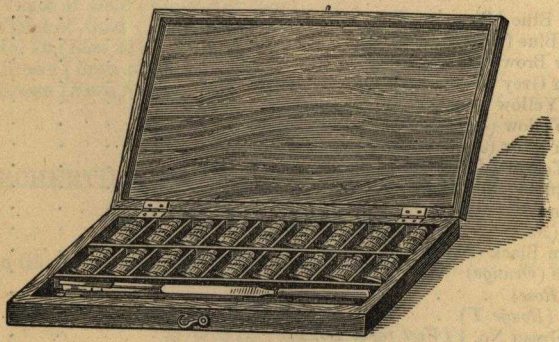

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French-polished Mahogany Box, containing 18 tubes, palette knife, sketching crayon, and brushes . . .	1	0	0

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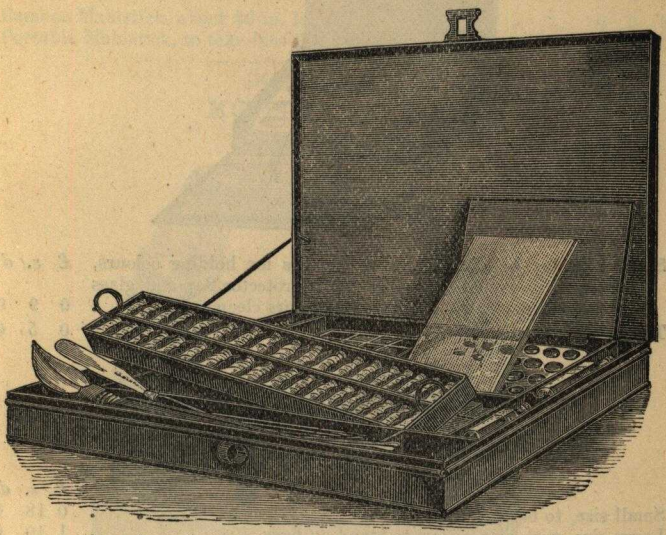

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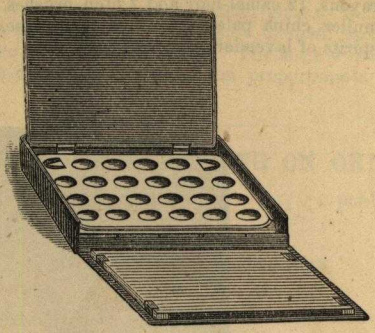

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A reduction made for Services, or quantities.

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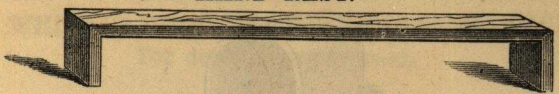

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In French-polished Mahogany . . . . . each	0	2	0
Bamboo Mahlstick, about 36 in. long . . . . . „	0	0	8
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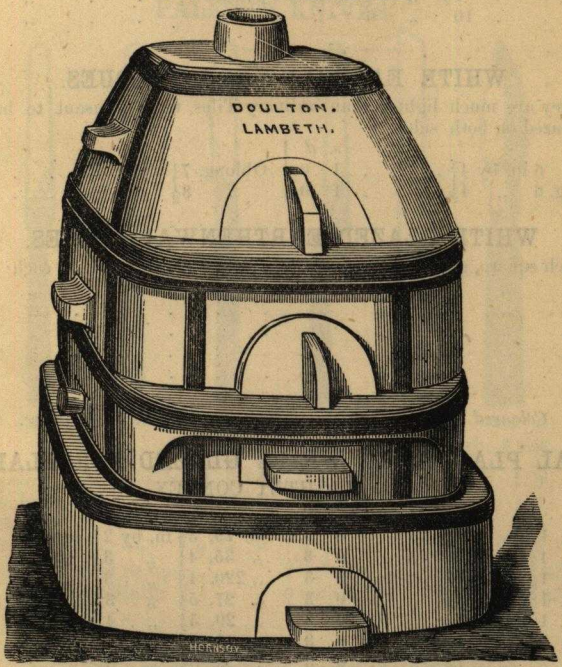

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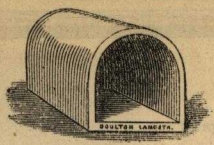

							s.	d.
No. 1	7½ in. by	3½ in. and	2¾ in. high			each	2	0
„ 2	8 „	3¾ „	3 „			„	2	6
„ 3	8½ „	4 „	3 „			„	3	0
„ 4	9 „	4½ „	3¼ „			„	3	6
„ 5	9½ „	5 „	3¾ „			„	4	0
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They are much lighter than ordinary Tiles, more pleasant to handle, and glazed on both sides.

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4¼ inch square, glazed one side, each	0	4
5 „ „ „ „ „	0	5
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7 „ „ „ „ „	0	9
8 „ „ „ „ „	1	0
9 „ „ „ „ „	2	6
12 „ „ „ „ „	6	0

Coloured Tiles in a variety of tints, same prices as the above.

OVAL PLAQUES IN WHITE GLAZED PORCELAIN, AND SLIGHTLY CONVEX.

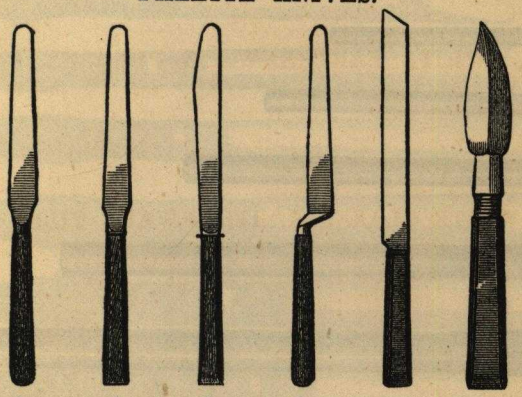
				s.	d.					s.	d.
No. 78,	1 in. by	⅞,	each	0	3	No. 19,	3½ in. by	2¾,	each	0	9
„ 52,	1¼ „	1 „		0	3	„ 35,	4¼ „	3⅜ „		0	11
„ 95,	1⅝ „	1⅛ „		0	3	„ 220,	4⅝ „	3¼ „		1	0
„ 73,	1⅝ „	1⅛ „		0	3	„ 27,	5¼ „	3¾ „		1	6
„ 37,	1⅝ „	1⅝ „		0	3	„ 29,	5¼ „	4 „		1	9
„ 62,	1¾ „	1⅓ „		0	3	„ 25,	5⅞ „	4⅝ „		2	2
„ 53,	2 „	1⅝ „		0	3	„ 8,	6⅝ „	5⅛ „		2	6
„ 34,	2⅝ „	2 „		0	4	„ 7,	6⅝ „	5⅝ „		3	0
„ 81,	3 „	2⅜ „		0	7	„ 5,	7⅝ „	5½ „		4	0

All Lacroix's Colours will fire well on Porcelain Plaques, with exception of Blue No. 29, plain Light Brown, and plain Dark Brown, which will answer on ordinary earthenware only.

MINTON'S
WHITE ROUND EARTHENWARE TRAYS,
For decorative purposes.

	s.	d.		s.	d.
7 inches diameter . . each	3	0	12 inches diameter . . each	7	6
8½ „ „ . . „	3	6	13 „ „ . . „	10	0
9½ „ „ . . „	4	0	14 „ „ . . „	11	0
10 „ „ . . „	4	8	15 „ „ . . „	14	0
11 „ „ . . „	5	4	16 „ „ . . „	16	0

PALETTE KNIVES.



2. 4. 6. 8. 20.

No.	3 inch. s.	3 inch. d.	3½ inch. s.	3½ inch. d.	4 inch. s.	4 inch. d.	4½ inch. s.	4½ inch. d.	5 inch. s.	5 inch. d.	5½ in. s.	5½ in. d.
2. Best steel, cocoa handle, ea.	0	8	0	9	0	10	0	11	1	0	1	4
4. Ditto, balance „ „	0	11	1	0	1	0	1	1	1	2	—	
6. Ditto, askew blade „ „	1	2	1	3	1	4	1	5	1	6	1	9
8. Ditto Trowel „ „	2	0	2	1	2	2	2	4	2	6	2	9

No. 20. Curved Scraper . . 2 inch, 1*s.* 6*d.* 3 inch, 1*s.* 10*d.*
Ivory Knife . . . 6 inch, 1*s.* 6*d.* 8 inch, 2*s.* 0*d.*

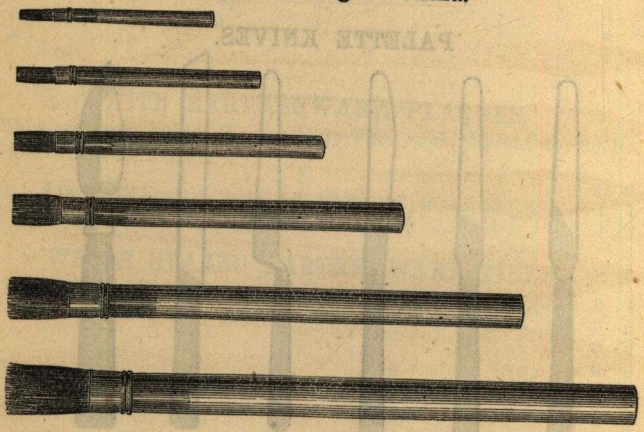
EXTRA-FINE CAMEL-HAIR IN QUILLS,
For Painting on China.

	s.	d.		s.	d.
No. 1. Pigeon Quill . . each	0	2	No. 4. Large Duck Quill, each	0	2½
„ 2. Crow „ . . „	0	2	„ 5. Small Goose „ „	0	3
„ 3. Small Duck Quill „	0	2½	„ 6. Full „ „ „	0	4

WHITE GOAT'S-HAIR, IN QUILLS,
For Painting on China.

		s.	d.			s.	d.
No. 1. Pigeon Quill . .	each	0	2	No. 4. Large Duck Quill,	each	0	3½
„ 2. Crow „ . .	„	0	2	„ 5. Small Goose „	„	0	5
„ 3. Small Duck Quill	„	0	3	„ 6. Full „ „	„	0	7

EXTRA-FINE FITCH-HAIR, IN QUILLS,
For Painting on China.



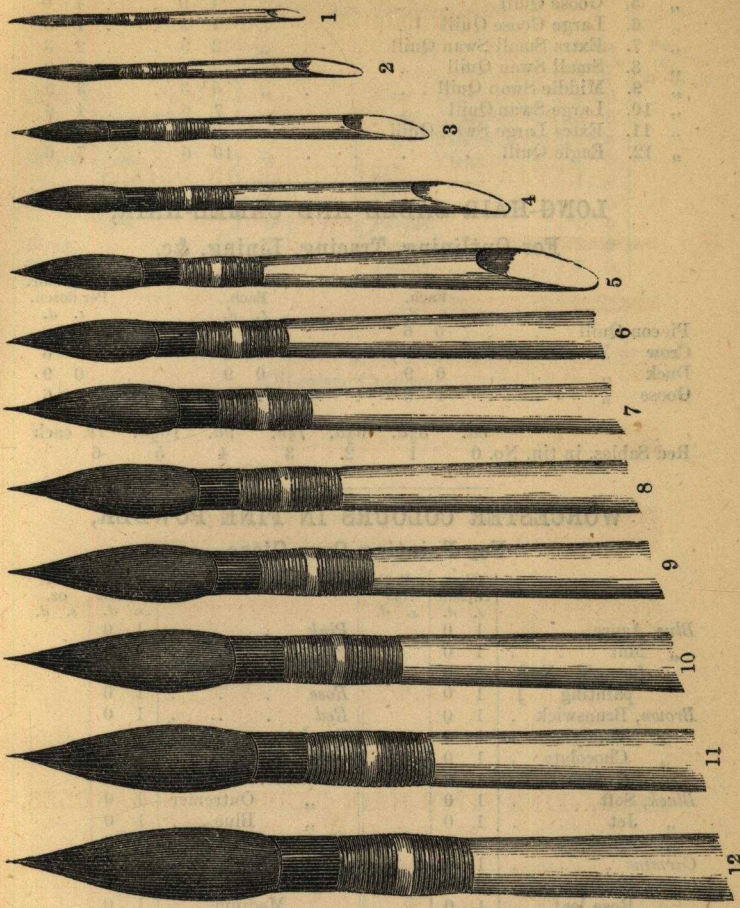
		s.	d.			s.	d.
No. 1. Pigeon Quill . .	each	0	2	No. 4. Large Duck Quill,	each	0	3½
„ 2. Crow „ . .	„	0	2	„ 5. Small Goose „	„	0	5
„ 3. Small Duck . .	„	0	3	„ 6. Full „ „	„	0	7

EXTRA-FINE FITCH-HAIR DABBERS, ON HANDLES,
For Painting on China.

	Askew Top. s.	d.	Flat Top. s.	d.		Askew Top. s.	d.	Flat Top. s.	d.
No. 1 .	0	9 .	each 0	6	No. 7 .	2	9 .	each 2	3
„ 2 .	1	0 .	„ 0	9	„ 8 .	3	3 .	„ 2	9
„ 3 .	1	3 .	„ 1	0	„ 9 .	3	9 .	„ 3	3
„ 4 .	1	6 .	„ 1	3	„ 10 .	4	0 .	„ 3	9
„ 5 .	1	10 .	„ 1	6	„ 11 .	4	6 .	„ 4	0
„ 6 .	2	3 .	„ 1	10	„ 12 .	5	0 .	„ 4	6

No. 1 is about $\frac{5}{16}$ inch diameter and No. 12. about $\frac{3}{4}$ inch.

SUPERIOR SABLE BRUSHES IN QUILLS.



		Brown Sable.		Red Sable.	
		s.	*d.*	*s.*	*d.*
No. 0.	Lark Quill . . . . . each			0	4
„ 1.	Pigeon Quill . . . . . „	0	4	0	3
„ 2.	Crow Quill . . . . . „	0	4	0	4
„ 3.	Duck Quill . . . . . „	0	6	0	6

		Brown Sable.	Red Sable.
		s. d.	s. d.
No. 4.	Large Duck Quill . . . each	0 9 . .	0 9
„ 5.	Goose Quill . . . . „	1 0 . .	1 0
„ 6.	Large Goose Quill . . . „	1 3 . .	1 3
„ 7.	Extra Small Swan Quill . . „	2 9 . .	2 3
„ 8.	Small Swan Quill . . . „	3 9 . .	3 0
„ 9.	Middle Swan Quill . . . „	5 3 . .	3 9
„ 10.	Large Swan Quill . . . „	7 6 . .	4 6
„ 11.	Extra Large Swan Quill . . „	9 0 . .	6 0
„ 12.	Eagle Quill . . . . „	10 6 . .	7 6

LONG-HAIR SABLE AND CAMEL-HAIR,

For Outlining, Tracing, Lining, &c.

	Brown Sable. Each.	Red Sable. Each.	Camel-hair. Per dozen.
	s. d.	s. d.	s. d.
Pigeon Quill . .	0 6 . .	0 6	
Crow „ . .	0 6 . .	0 6 . .	0 6
Duck „ . .	0 9 . .	0 9 . .	0 9
Goose „ . .	1 6 . .	1 6 . .	1 6

	5*d.*	5½*d.*	6½*d.*	7½*d.*	9*d.*	10½*d.*	1*s.* each
Red Sables, in tin, No.	0	1	2	3	4	5	6

WORCESTER COLOURS IN FINE POWDER,

For Painting Over Glaze.

	Glass capsule s. d.	Per oz. s. d.		Glass capsule s. d.	Per oz. s. d.
Blue, Azure . .	1 0		*Pink* . . .	1 0	
„ Mat . .	1 0		*Purple*, Royal . .	2 0	
„ for old tile painting	1 0		„ Ordinary .	2 0	
Brown, Brunswick .	1 0		*Rose* . . .	1 0	
„ Vandyke .	1 0		*Red* . . .	1 0	
„ Chocolate .	1 0		*Scarlet* . . .		
„ Golden .	1 0		*Silver*, prepared .		
Black, Soft .	1 0		*Turquoise*, Imperial .	1 0	
„ Jet . .	1 0		„ Outremer	1 0	
„ Shining .	1 0		„ Blue .	1 0	
Carmine . . .	1 0		*Violet* . . .	1 0	
Green, Blue . .	0 6		*White*, Enamel .	1 0	
„ Rose leaf .	1 0		„ Soft . .	1 0	
„ Dover . .	1 0		„ Medium .	1 0	
Gold, prepared .			„ Hard . .	1 0	
Maroon . . .			*Yellow*, Persian .	1 0	
Orange, Light . .	0 6		„ Hard . .	1 0	
„ Dark . .	0 6		„ Opaque .	1 0	

WORCESTER COLOURS IN FINE POWDER,

For Painting Under-glaze.

	Glass capsule s. d.	Per oz. s. d.		Glass capsule s. d.	Per oz. s. d.
Blue, Mat . .	1 0		*Dove* . . .	1 0	
,, Ultramarine .	1 0		*Green*, Blue . .	1 0	
,, Azure . .	1 0		,, French .	1 0	
Brown, Claret .	1 0		,, Victoria .	1 0	
,, Vandyke .	1 0		*Orange* . . .	1 0	
,, Chesnut .	1 0		*Pink* . . .	1 0	
,, Dark . .	1 0		*Purple* . . .	1 0	
Black . . .	1 0		*Turquoise* . .	1 0	
Buff . . .	1 0		*Yellow* . . .	1 0	

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